

# *The Book of Gem Cuts*

*Second Edition*





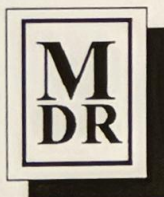
## INTRODUCTION

**F**ACETING is a creative experience, an art. In the same manner that a sculptor with hammer and chisel creates a masterpiece, so it is with the faceter. Rough gem material, not unlike rock, is transformed into a magnificent gleaming gemstone with the tools at one's command.

This book is dedicated to those artists of the faceting world who, through their experiences and ingenuity have created an endless variety of gem designs. We hope that through the use of this manual your own mind will be further stimulated and you may also experience the full circle of gem creativity.

Acknowledgement is given to Mr. Bob Livingston, Master Faceter and former Faceting Instructor at Grieger's Faceting School in Pasadena, California. Each design was test-cut by Mr. Livingston. With the illustrated drawings and simplified directions, the faceter will have no problems when cutting these beautiful designs.

We take great pleasure in presenting Volume 3 of *The Book of Gem Cuts*



**MDR Manufacturing, Inc.**

*The home of Master faceting instruments*

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Kingwood, Texas 77325**

**Phone: (713) 358-3027**

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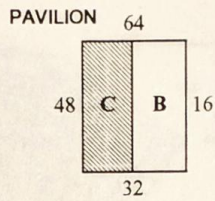
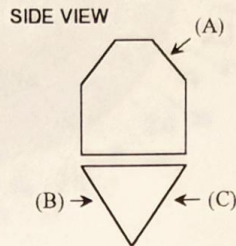
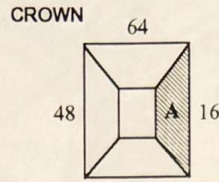
### POLISHING RECOMMENDATIONS

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No. 2	Birdcage Cut	Ed Porter
No. 3	Brilliant Cross Cut	Edith B. Strout
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No. 5	Fairy Wand Cut	Edith B. Strout
No. 6	Brieger's Fantasy Cut	Idar Oberstein Gem Guild
No. 7	High Twelve Cut	Gerald I. Hemrich
No. 8	Miser Cut	Clem V. Svoboda
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No. 15	Snowflake Cut	Mel Roth
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No. 17	Sunburst Cut	Alton R. Walls
No. 18	Switzer's Brilliant Cut	Alfred E. Switzer
No. 19	Tapeze Twist Cut	Bill Steele

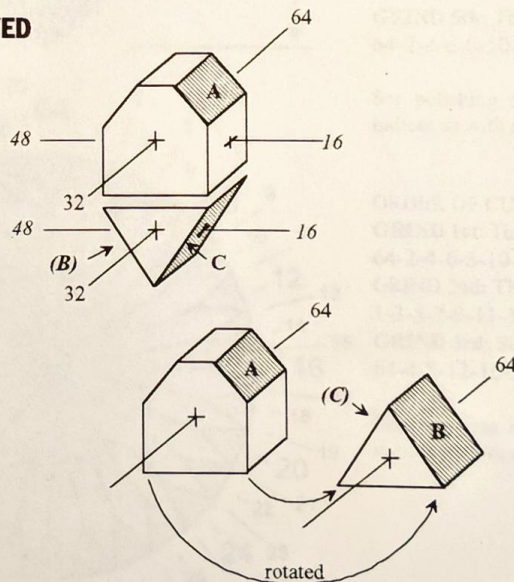


# CONVENTIONS USED WITH DIAGRAMS

## PLAN VIEWS



## HOW DERIVED

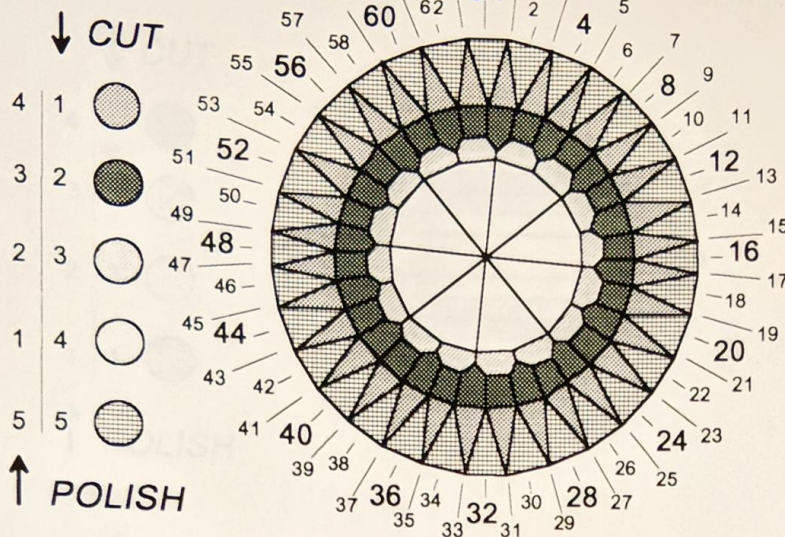




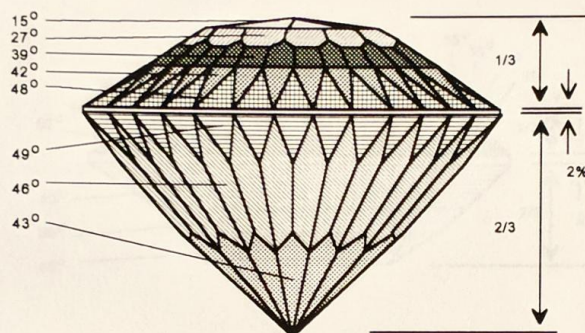
# BICENTENNIAL CUT

No. 1

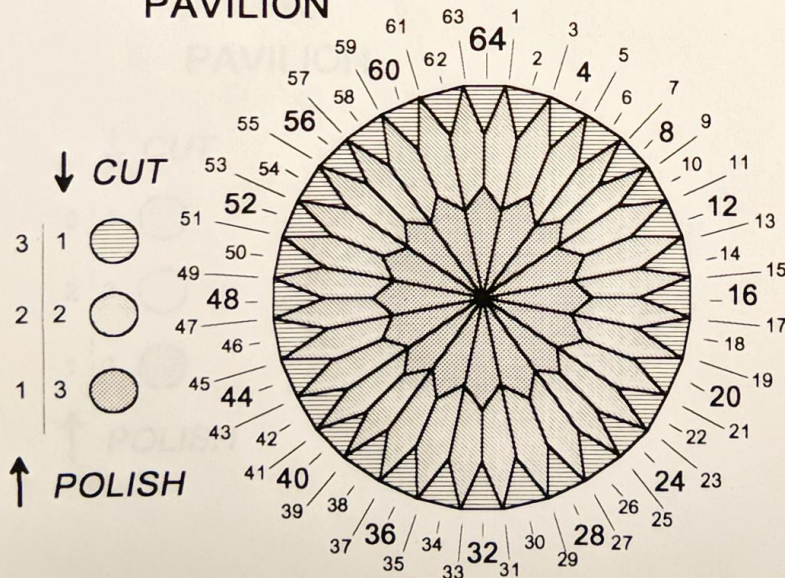
## CROWN



## SIDE VIEW



## PAVILION



THE BICENTENNIAL cut was designed by Bob Livingston, nationally known faceter and instructor, to commemorate the Bicentennial Anniversary of the United States. The "200" facets on the design are unusual inasmuch as most gemstones have an odd number of facets.

The Original BICENTENNIAL (ANGELENO) was cut from a natural blue topaz, and had a finished diameter of 18mm. The brilliance of this cut is outstanding. We suggest using light colored cutting materials. The finished size should measure at least 15mm in diameter.

**64 Index - Angles for Quartz**  
Table should be 45% to 50% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
64-2-4-6-8-10-12-14-etc.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Thirty-two facets at 42° indexing:  
1-3-5-7-9-11-13-etc.  
**GRIND 2nd:** Thirty-two facets at 39° indexing:  
1-3-5-7-9-11-13-etc.  
**GRIND 3rd:** Sixteen facets at 27° indexing:  
3-7-11-15-19-23-27-31-35-39-43-47-51-55-59-63  
**GRIND 4th:** Eight facets at 15° indexing:  
5-13-21-29-37-45-53-61.  
**GRIND 5th:** Thirty-two facets at 48° indexing:  
64-2-4-6-8-10-12-14-16-etc.

See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Thirty-two facets at 49° indexing:  
64-2-4-6-8-10-12-14-16-etc.  
**GRIND 2nd:** Thirty-two facets at 46° indexing:  
1-3-5-7-9-11-13-15-17-etc.  
**GRIND 3rd:** Sixteen facets at 43° indexing:  
64-4-8-12-16-20-24-28-32-etc.

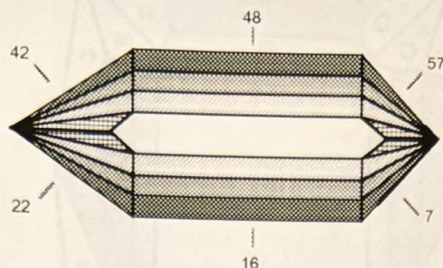
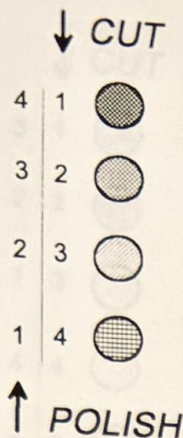
See polishing order on left, using same angles and indices as with grinding.



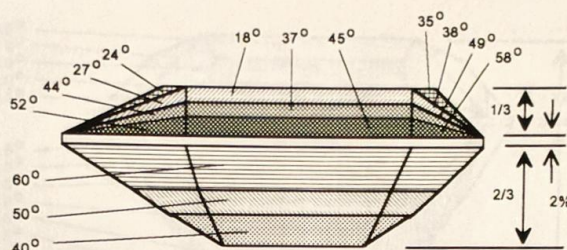
# BIRDCAGE CUT

No. 2

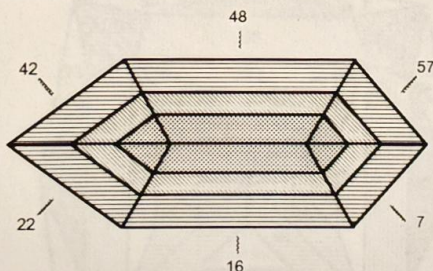
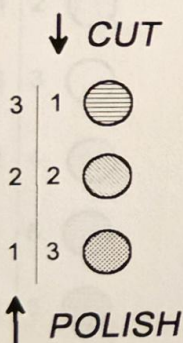
## CROWN



## SIDE VIEW



## PAVILION



Bucking stiff competition in the 1964 California Federation show, Ed D. Porter of the L.E.R.C. Rockcrafters Club won the trophy for best single faceted stone. We believe this unusual cut imparts a brilliance and flash seldom seen in large stones. Thanks to GEM & MINERALS magazine, we are able to publish this design.

Directions for cutting are based on the width versus length of a pre-formed stone. The fan cut on each end will vary with the width of the stone. Some adjustments using the compound angle adjuster may be necessary to make "bar" facets and "fan" facets meet.

### 64 Index - Angles for Quartz

Ratio of Length to Width : 2-1/2:1

Table should be about 25% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
7-16-22-42-48-57.

### ORDER OF CUTTING - Crown

- GRIND 1st: Two facets at 45° indexing 16-48.
- GRIND 2nd: Two facets at 37° indexing 16-48.
- GRIND 3rd: Two facets at 18° indexing 16-48.
- GRIND 4th: Two facets at 58° indexing 7-57.
- GRIND 5th: Two facets at 49° indexing 7-57.
- GRIND 6th: Two facets at 38° indexing 5-59.
- GRIND 7th: Two facets at 35° indexing 4-60.
- GRIND 8th: Two facets at 52° indexing 22-42.
- GRIND 9th: Two facets at 44° indexing 22-42.
- GRIND 10th: Two facets at 27° indexing 24-40.
- GRIND 11th: Two facets at 24° indexing 25-39.

See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

- GRIND 1st: Six facets at 60° indexing:  
7-16-22-42-48-57.
- GRIND 2nd: Six facets at 50° indexing:  
7-16-22-42-48-57.
- GRIND 3rd: Six facets at 40° indexing:  
7-16-22-42-48-57.

See polishing order on left, using same angles and indices as with grinding.

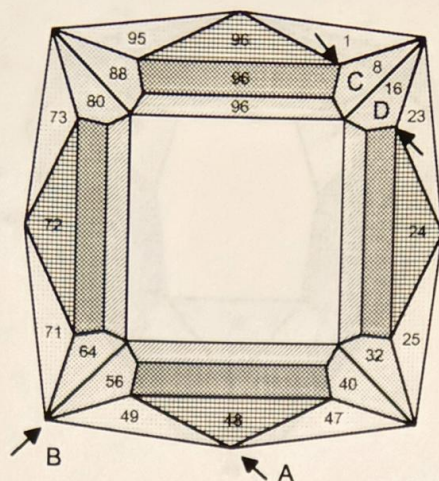
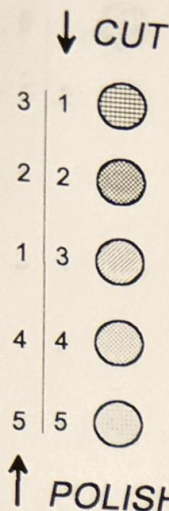


# BRILLIANT CROSS CUT

No. 3

We have test cut this design by Edith Strout in three different colored stones: blue topaz (good), deep amethyst (excellent) and white YAG (excellent). Sparkle is outstanding. Be sure you read the notes, otherwise there may be problems.

## CROWN





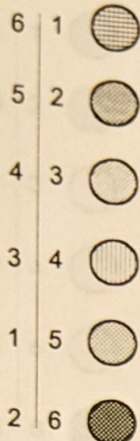
# DEVIL'S TRIANGLE

No. 4

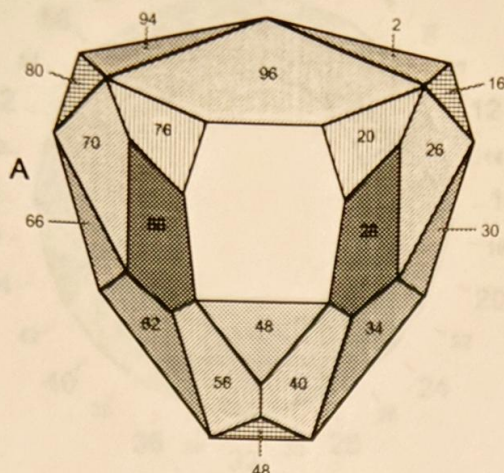
Betty Scott, a graduate student from Geiger's and a cutter for less than one year, was asked by us to create a new design. We wanted to call it the DEVIL'S TRIANGLE. The idea was to show a devil's face on the crown and a maelstrom on the pavilion. She accomplished the exact pattern on her first attempt. The original stone was cut from medium blue spinel, measuring 12mm on the long axis.

## CROWN

↓ CUT



↑ POLISH



**96 Index - Angles for Quartz**  
Ratio of Length to Width - 1:1  
Table should be 40% of girdle width.

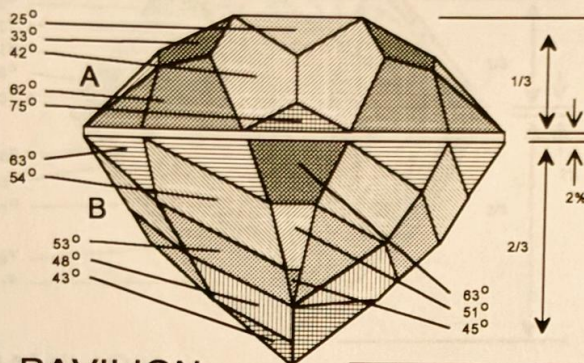
## SHAPE GEM

Shape girdle by grinding at 90° indexing:  
94-2-30-34-62-66, 16-48-80.

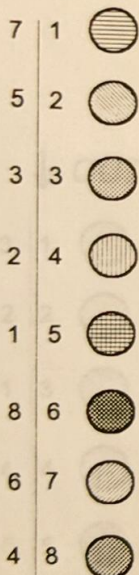
## ORDER OF CUTTING - Crown

Note: C.L. = Compound Adjust Left  
C.R. = Compound Adjust Right

## SIDE VIEW

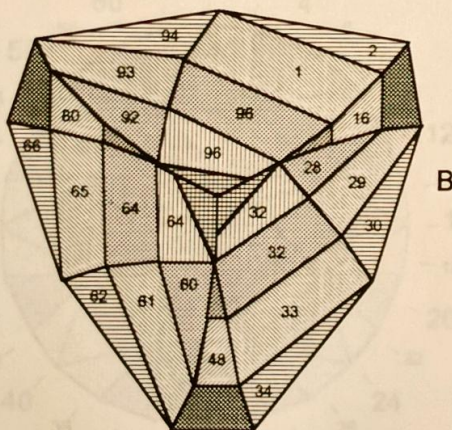


↓ CUT



↑ POLISH

## PAVILION



**GRIND 1st:** Three facets at 75° indexing:  
16-48-80.

**GRIND 2nd:** Six facets at 62° indexing:  
94-2-30-34-62-66.

**GRIND 3rd:** Five facets at 42° indexing:  
96, 26 w/ C.R.=2°, 40, 56, 70 w/ C.L.=2°

(Be sure to reset "zero" on uncompounded angles.)

**GRIND 4th:** Two facets at 25° indexing 20-76.

**GRIND 5th:** One facet at 25° indexing 48.

**GRIND 6th:** Two facets at 33° indexing 28-68.

See polishing order on left, using same angles and indices as with grinding.

## ORDER OF CUTTING - Pavilion

**GRIND 1st:** Six facets at 63° indexing:  
94-2-30-34-62-66.

**GRIND 2nd:** Six facets at 54° indexing:  
93-1-29-33-61-65. Set C.R.=1/2° on cuts.

**GRIND 3rd:** Six facets at 53° indexing:  
92-96-28-32-60-64. Set C.R.=1/2° on cuts.

**GRIND 4th:** Three facets at 48° indexing:  
96-32-64. Set C.L.=1-1/2° on cuts.

**GRIND 5th:** Three facets at 43° indexing:  
95-31-63. Set C.L.=1-1/2° on cuts.

**GRIND 6th:** Three facets at 63° indexing:  
16-48-80.

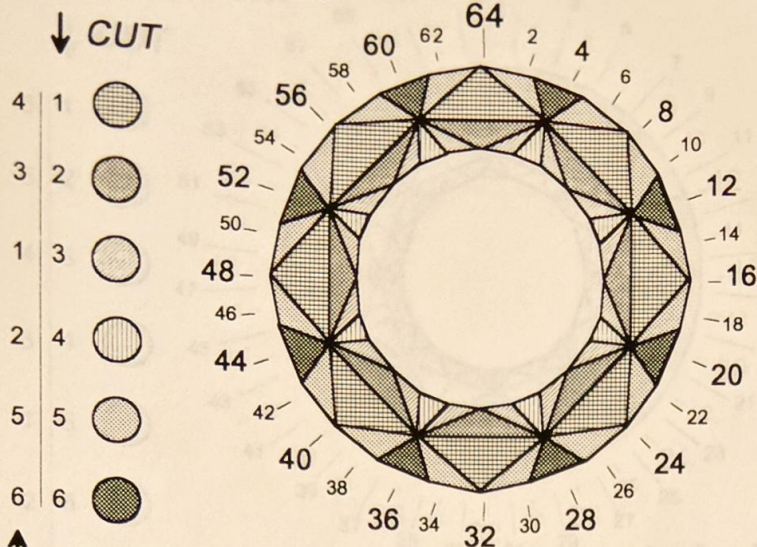
**GRIND 7th:** Three facets at 51° indexing:  
16-48-80. (May be necessary to adjust.)

**GRIND 8th:** Three facets at 45° indexing:  
16-48-80. (May be necessary to adjust.)

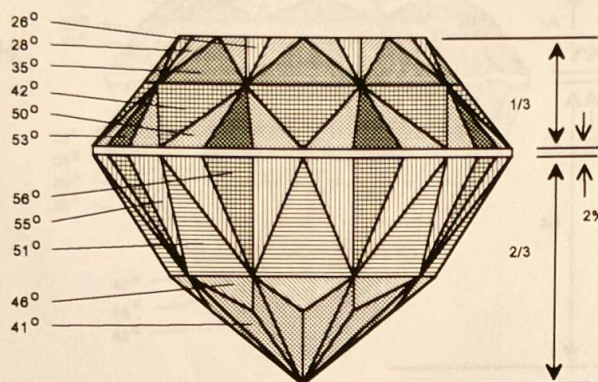
See polishing order on left, using same angles and indices as with grinding.



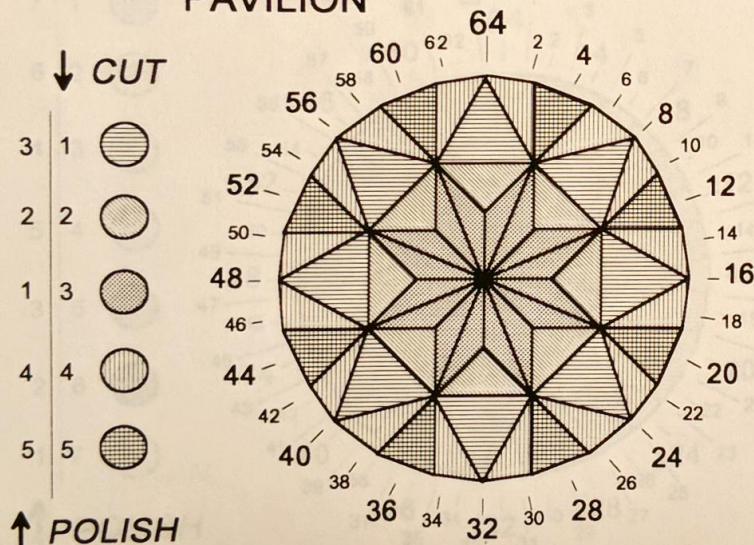
### CROWN



### SIDE VIEW



### PAVILION



FAIRY WAND is the second design contributed by Edith Strout. Like the Brilliant Cross, it too has outstanding brilliance. We have made trial cuts on rhodolite garnet (12mm) and light peridot (11mm).

Care should be taken so that all three sets of star facets are of equal width at the table. The three sets girdle facets should be of equal width at the girdle.

64 Index - Angles for Quartz  
Table should be about 60% of girdle width.

#### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
2-4-6-10-12-14-etc.

#### ORDER OF CUTTING - Crown

- GRIND 1st: Eight facets at 42° indexing:  
64-8-16-24-32-40-48-56.
- GRIND 2nd: Eight facets at 35° indexing:  
64-8-16-24-32-40-48-56.
- GRIND 3rd: Sixteen facets at 28° indexing:  
2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62.
- GRIND 4th: Eight facets at 26° indexing:  
4-12-20-28-36-44-52-60.
- GRIND 5th: Sixteen facets at 50° indexing:  
2-6-10-14-etc.
- GRIND 6th: Eight facets at 53° indexing:  
4-12-20-28-etc.

See polishing order on left, using same angles and indices as with grinding.

#### ORDER OF CUTTING - Pavilion

- GRIND 1st: Eight facets at 51° indexing:  
64-8-16-24-etc.
- GRIND 2nd: Eight facets at 46° indexing:  
64-8-16-24-etc.
- GRIND 3rd: Sixteen facets at 41° indexing:  
2-6-10-14-etc.
- GRIND 4th: Sixteen facets at 55° indexing:  
2-6-10-14-etc.
- GRIND 5th: Eight facets at 56° indexing:  
4-12-20-28-etc.

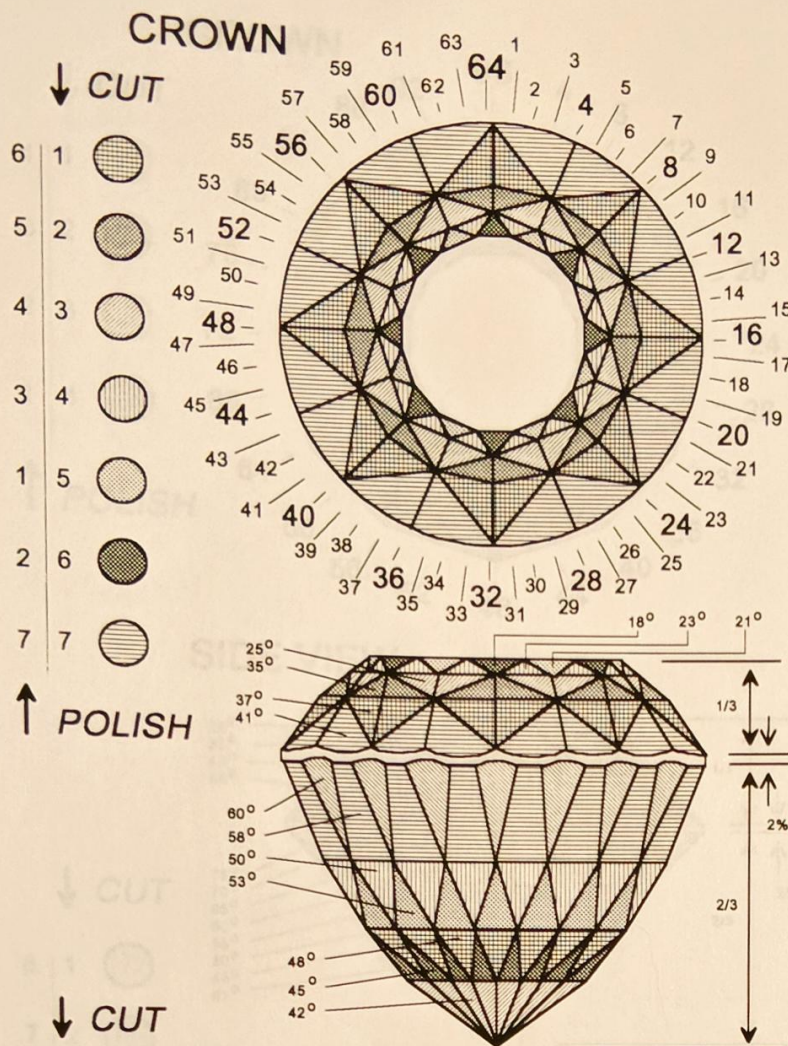
See polishing order on left, using same angles and indices as with grinding.



# FANTASY CUT

No. 6

The FANTASY cut was created for Grieger's Inc. by members of the Idar Oberstein Gem Guild of West Germany. It was presented to Mr. John Grieger at the 1972 opening of his new show-rooms in Pasadena, California. The high brilliance and elaborate dispersion of light make this a beautiful design for any gemstone. We advise that a finished stone be no smaller than 18mm in diameter.



## 64 Index - Angles for Quartz

Table should be about 40% of girdle width.

## SHAPE GEM

Grind circular girdle at 90°.

## ORDER OF CUTTING - Crown

### GRIND 1st: Sixteen facets at 37° indexing:

63-1-7-9-15-17-23-25-31-33-39-41-47-49-55-57. (Easiest to grind eight facets at 37° indexing: 64-8-16-24-32-40-48-56, then split.)

### GRIND 2nd: Sixteen facets at 35° indexing:

63-1-7-9-etc. (Split facets as in Grind 2nd.)

### GRIND 3rd: Sixteen facets at 25° indexing:

3-5-11-13-19-21-27-29-35-37-43-45-51-53-59-61. (Easiest to grind eight facets at 25° indexing: 4-12-20-28-36-44-52-60, then split.)

### GRIND 4th: Sixteen facets at 23° indexing:

3-5-11-13-etc. (Split facets as in Grind 3rd.)

### GRIND 5th: Eight facets at 21° indexing:

4-12-20-28-36-44-52-60.

### GRIND 6th: Eight facets at 18° indexing:

64-8-16-24-32-40-48-56.

### GRIND 7th: Sixteen facets at 41° indexing:

2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62.

See polishing order on left, using same angles and indices as with grinding.

## ORDER OF CUTTING - Pavilion

### GRIND 1st: Sixteen facets at 58° indexing:

2-6-10-14-etc.

### GRIND 2nd: Sixteen facets at 60° indexing:

64-4-8-12-etc.

### GRIND 3rd: Sixteen facets at 53° indexing:

64-4-8-12-etc.

### GRIND 4th: Sixteen facets at 50° indexing:

2-6-10-14-etc.

### GRIND 5th: Sixteen facets at 48° indexing:

64-4-8-12-etc.

### GRIND 6th: Sixteen facets at 45° indexing:

2-6-10-14-etc.

### GRIND 7th: Sixteen facets at 42° indexing:

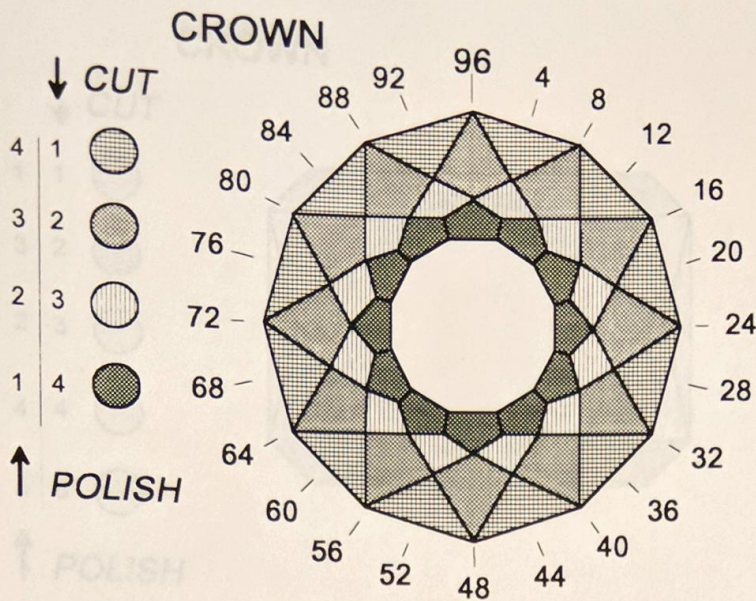
2-6-10-14-etc.

See polishing order on left, using same angles and indices as with grinding.

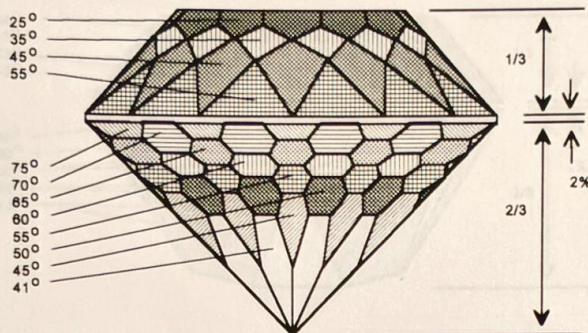


# HIGH TWELVE

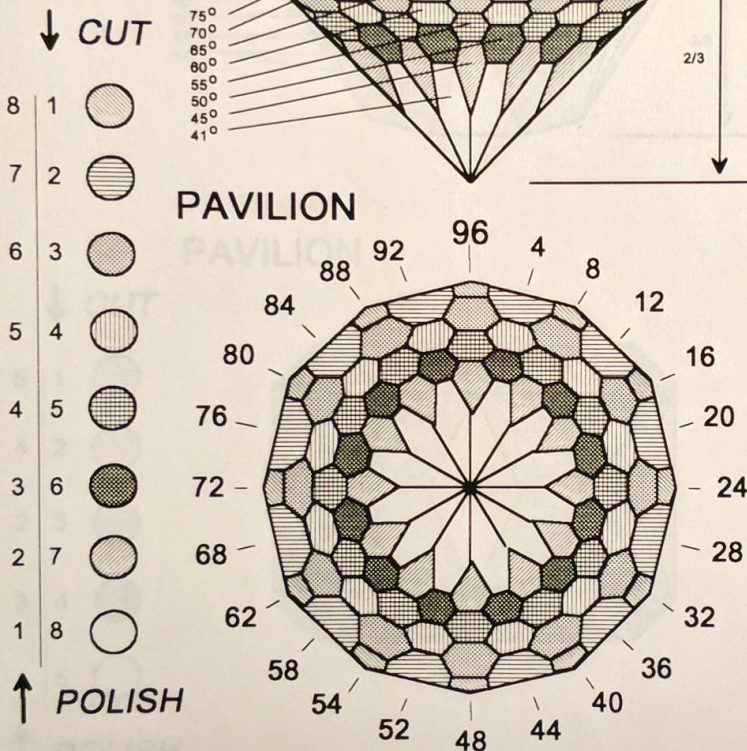
No. 7



## SIDE VIEW



## PAVILION



The **HIGH TWELVE** design of Gerald Hemrich combines two distinct styles of faceting - a brilliant cut crown and a honeycomb pavilion. Light colored material will yield highest brilliance. We recommend a finished size not be less than 20mm in diameter.

**96 Index - Angles for Quartz**  
Table should be about 40% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
4-12-20-28-36-44-52-60-68-76-84-92

### ORDER OF CUTTING - Crown

**GRIND 1st:** Twelve facets at 55° indexing:  
4-12-20-28-36-44-52-60-68-76-84-92

**GRIND 2nd:** Twelve facets at 45° indexing:  
96-8-16-24-32-40-48-56-64-72-80-88.

**GRIND 3rd:** Twelve facets at 35° indexing:  
4-12-20-28-etc.

**GRIND 4th:** Twelve facets at 25° indexing:  
96-8-16-24-etc.

See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Twelve facets at 70° indexing:  
96-8-16-24-etc.

**NOTE:** Girdle will not be a straight line as shown in diagram. Flat edges of pavilion facets will oppose points of crown. Take care not to over-cut Grind #2. Adjust this grind to a lesser angle if necessary.

**GRIND 2nd:** Twelve facets at 75° indexing:  
4-12-20-28-etc.

**GRIND 3rd:** Twelve facets at 65° indexing:  
96-8-16-24-etc.

**GRIND 4th:** Twelve facets at 60° indexing:  
4-12-20-28-etc.

**GRIND 5th:** Twelve facets at 55° indexing:  
96-8-16-24-etc.

**GRIND 6th:** Twelve facets at 50° indexing:  
4-12-20-28-etc.

**GRIND 7th:** Twelve facets at 45° indexing:  
96-8-16-24-etc.

**GRIND 8th:** Twelve facets at 41° indexing:  
4-12-20-28-etc.

See polishing order on left, using same angles and indices as with grinding.

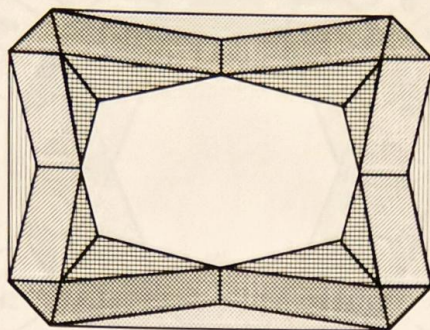


### CROWN

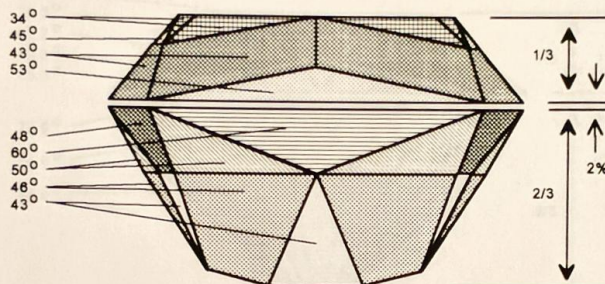
↓ CUT

- |   |   |  |
|---|---|--|
| 1 | 1 |  |
| 3 | 2 |  |
| 2 | 3 |  |
| 4 | 4 |  |
| 5 | 5 |  |

↑ POLISH



### SIDE VIEW

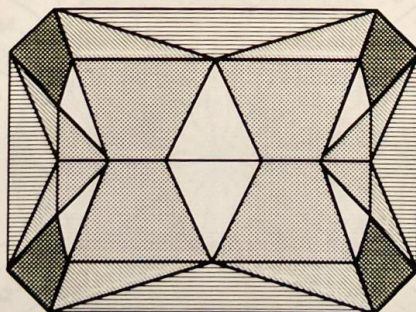


### PAVILION

↓ CUT

- |   |   |  |
|---|---|--|
| 5 | 1 |  |
| 4 | 2 |  |
| 2 | 3 |  |
| 3 | 4 |  |
| 1 | 5 |  |

↑ POLISH



Clem Svoboda, does not agree with the old adage, "There's nothing new under the sun." He is well known for trying his hand at styles to get away from the old, usual and ordinary. Beginning with a rectangular shape, he modified facets to create a design that would still maximize yield - hence the name "MISER CUT".

The original gemstone was a chartreuse beryl, measuring 25mm x 15mm and weighing 43.49 carats.

#### 96 Index - Angles for Quartz

Ratio of Length to Width: 1-2/3:1

Table about 50% of girdle width

#### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
96-48-24-72, 12-36-60-84.

#### ORDER OF CUTTING - Crown

**GRIND 1st:** Eight facets at 34° indexing:  
94-2-46-50, 23-25-71-73.

**GRIND 2nd:** Eight facets at 43° indexing:  
94-2-46-50, 12-36-60-84.

**GRIND 3rd:** Four facets at 40° indexing:  
23-25-71-73.

**GRIND 4th:** Two facets at 45° indexing  
24-72.

**GRIND 5th:** Two facets at 53° indexing  
96-48.

See polishing order on left, using same angles and indices as with grinding.

#### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Four facets at 60° indexing:  
96-48-24-72.

**GRIND 2nd:** Eight facets at 50° indexing:  
94-2-46-50, 21-27-69-75.

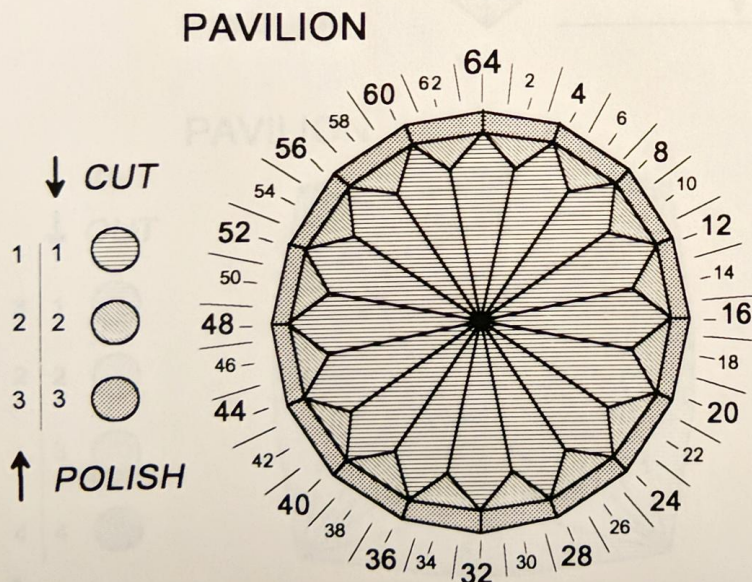
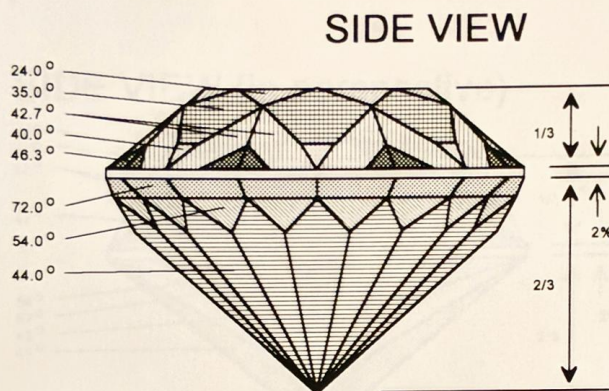
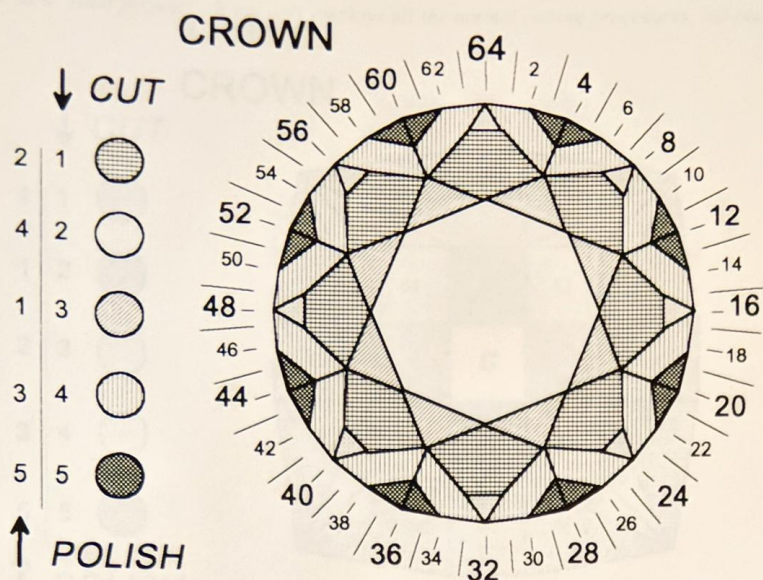
**GRIND 3rd:** Eight facets at 46° indexing:  
94-2-46-50, 21-27-69-75.

**GRIND 4th:** Four facets at 48° indexing:  
12-36-60-84.

**GRIND 5th:** Six facets at 43° indexing:  
96-48, 12-36, 60-84.

See polishing order on left, using same angles and indices as with grinding.





Here is a cut by Clem Svoboda that resulted from experimenting with horizontally split main facets. The double crown girdle facets change the otherwise plain look to a unique design. The original stone was cut from medium blue topaz. Finished gem was 16.3mm in diameter, weighing 20.25 carats.

**64 Index - Angles for Quartz**  
Table could be about 50% of girdle width.

## SHAPE GEM

Shape girdle by grinding at 90° indexing:  
2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62.

## ORDER OF CUTTING - Crown

- GRIND 1st:** Eight facets at 35° indexing:  
64-8-16-24-32-40-48-56.
- GRIND 2nd:** Eight facets at 40° indexing:  
64-8-16-24-etc.
- GRIND 3rd:** Eight facets at 24° indexing:  
4-12-20-28-36-44-52-60.
- GRIND 4th:** Sixteen facets at 42-2/3° indexing:  
2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62. (Easiest to cut eight facets indexing:  
4-12-20-28-36-44-52-60, then split facets by two units on each index setting.)
- GRIND 5th:** Sixteen facets at 46-1/3° indexing:  
3-5-11-13-19-21-27-29-35-37-43-45-51-53-59-61. (Easiest to cut eight facets indexing:  
4-12-20-28-36-44-52-60, then split facets by one unit on each index setting.)

See polishing order on left, using same angles and indices as with grinding.

## ORDER OF CUTTING - Pavilion

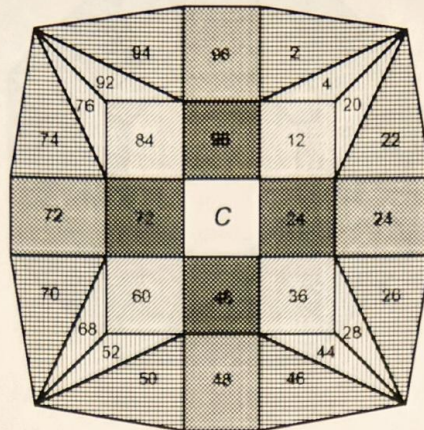
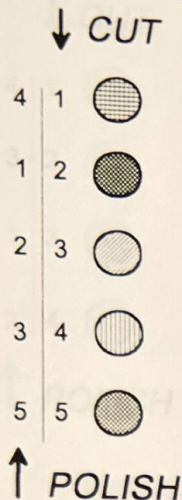
- GRIND 1st:** Sixteen facets at 44° indexing:  
64-4-8-12-16-20-24-28-32-36-40-44-48-52-56-60.
- GRIND 2nd:** Sixteen facets at 54° indexing:  
2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62.
- GRIND 3rd:** Sixteen facets at 72° indexing:  
2-6-10-14-18-22-etc.

See polishing order on left, using same angles and indices as with grinding.



This design by Elmer W. Ferris was used in Bob Livingston's course on faceting at Griegers. It was one of the better cuts for students to use as a "final project". It not only employs all the normal cutting procedures, but requires compounding of angles and cutting of multiple table facets. To add another challenge the students made the 9-SQUARE CUT using corundum. Polishing was done on a zinc lap using 50,000 mesh diamond compound.

## CROWN



### 96 Index - Angles for Quartz

Table should be about 20% of girdle width.

### SHAPE GEM

Grind flat surface for table, then shape girdle by grinding at 90° indexing: 94-2-22-26-46-50-70-74. Do not grind 96-24-48-72 facets at this time. Width of square facets on sides will be determined by table cuts.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Eight facets at 42° indexing: 94-2-22-26-46-50-70-74.

**NOTE:** Make sure facets are well centered, but do not cut to a point. Leave about 55% of the table area flat.

**GRIND 2nd:** Four facets at 10° indexing: 96-24-48-72.

**NOTE:** Grind facets until width of table facet "C" is 1/3 of width for that of total 9-Square table area.

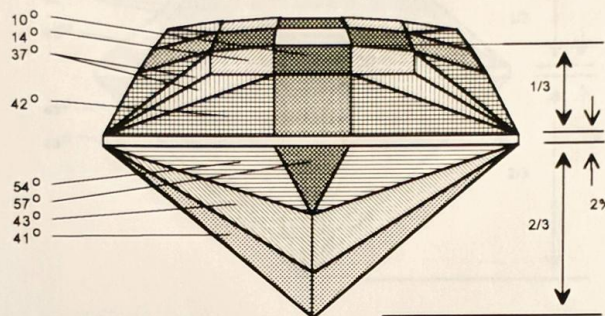
**GRIND 3rd:** Four facets at 14° indexing: 12-36-60-84. (Facets won't be square until 4th grind is made.)

**GRIND 4th:** Four facets at 37° indexing: 4-20-28-44-52-68-76-92.

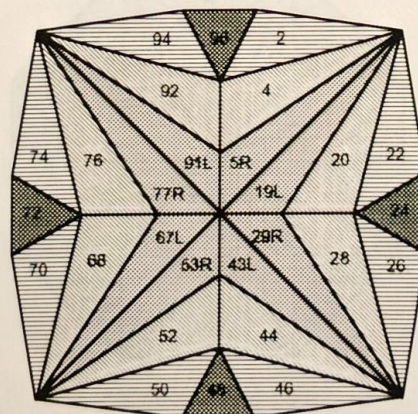
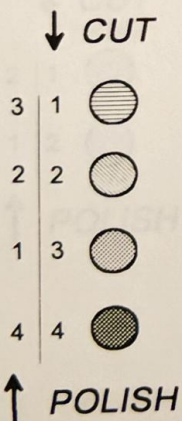
**GRIND 5th:** Four facets at 42° indexing: 96-24-48-72.

**NOTE:** Return to 90° and complete shaping girdle indexing 96-24-48-72.

## SIDE VIEW (in perspective)



## PAVILION



See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Eight facets at 54° indexing: 94-2-22-26-etc.

**GRIND 2nd:** Eight facets at 43° indexing: 92-4-20-28-44-52-68-76.

**GRIND 3rd:** Eight facets at 41° indexing: 91 (C.L.), 5 (C.R.), 19 (C.L.), 29 (C.R.), 43 (C.L.), 53 (C.R.), 67 (C.L.), 77 (C.R.).

**NOTE:** C.L. = Compound Adjust to Left.

C.R. = Compound Adjust to Right.

**GRIND 4th:** Four facets at 57° indexing: 96-24-48-72.

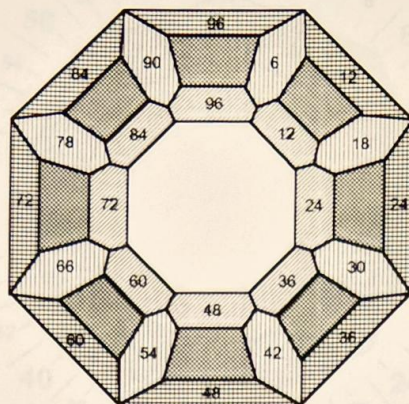
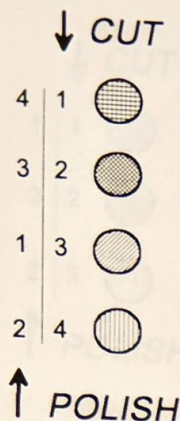
See polishing order on left, using same angles and indices as with grinding.



# OCTABRIL CUT

No. 11

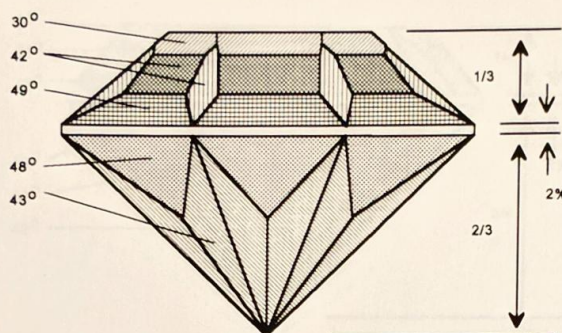
## CROWN



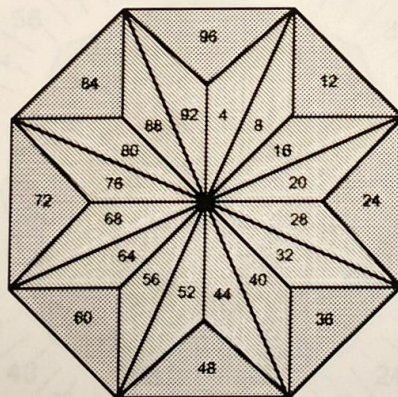
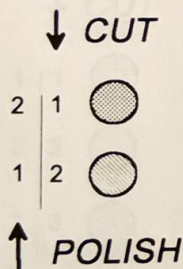
The OCTABRIL was designed by R. Thompson, who operated his own Gem Studio in Petaluma, California. The best size for the cut is between 10mm and 12mm in diameter. When using darker material, a larger table works best.

We recommend that the pavilion be cut first.

## SIDE VIEW



## PAVILION



96 Index - Angles for Quartz  
Table can be 40% to 60% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
96-12-24-36-48-60-72-84.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Eight facets at 49° indexing:  
96-12-24-36-48-60-72-84.

**GRIND 2nd:** Eight facets at 42° indexing:  
96-12-24-36-etc.

**GRIND 3rd:** Eight facets at 30° indexing:  
96-12-24-36-etc.

**GRIND 4th:** Eight facets at 42° indexing:  
6-18-30-42-54-66-78-90.

See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

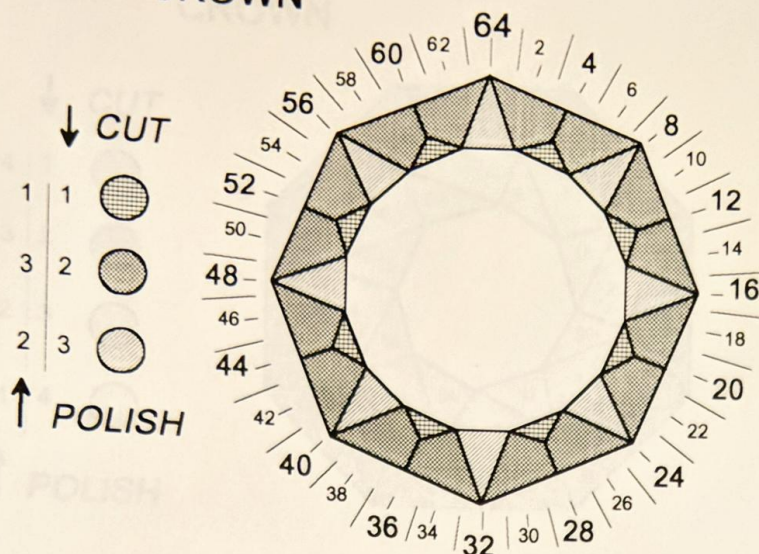
**GRIND 1st:** Eight facets at 48° indexing:  
96-12-24-36-etc.

**GRIND 2nd:** Sixteen facets at 43° indexing:  
4-8-16-20-28-32-40-44-52-56-64-68-76-80-88-92.

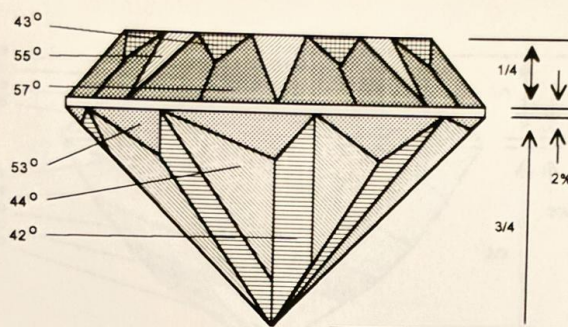
See polishing order on left, using same angles and indices as with grinding.



## CROWN



## SIDE VIEW



### 64 Index - Angles for Quartz

Table should be 60% to 65% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
4-12-20-28-36-44-52-60.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Eight facets at 43° indexing:  
4-12-20-28-36-44-52-60.  
**GRIND 2nd:** Eight facets at 55° indexing:  
64-8-16-24-32-40-48-56.  
**GRIND 3rd:** Sixteen facets at 57° indexing:  
63-1-7-9-15-17-23-25-31-33-39-41-47-49-55-57.

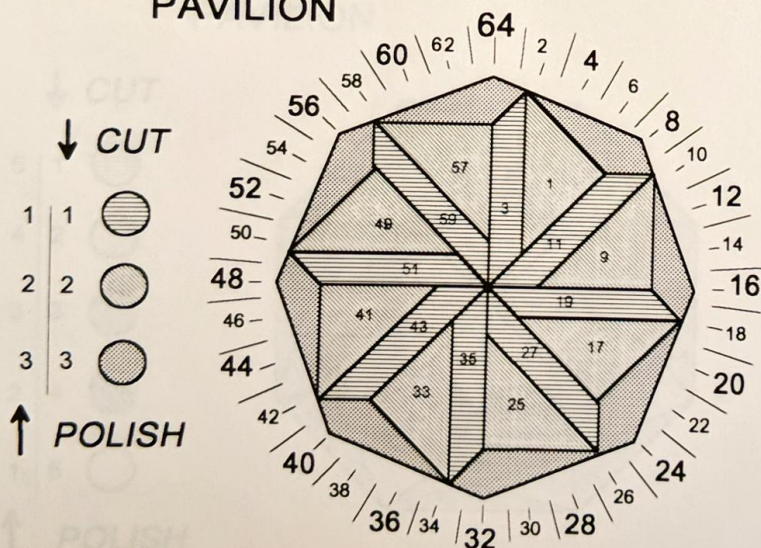
See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Eight facets at 42° indexing:  
64-8-16-24-32-40-48-56.  
**GRIND 2nd:** Eight facets at 44° indexing:  
1-9-17-25-33-41-49-57.  
**GRIND 3rd:** Eight facets at 53° indexing:  
3-11-19-27-35-43-51-59

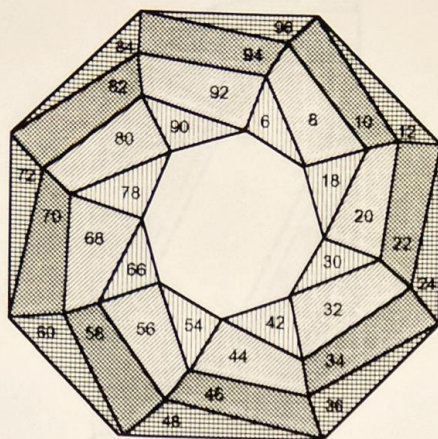
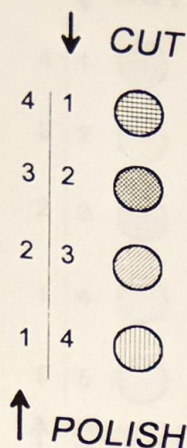
See polishing order on left, using same angles and indices as with grinding.

## PAVILION





### CROWN



*PINWHEEL is an original by Ed Hume, a member of the Seattle Faceters Club. The design is made like a step-cut with succeeding rows off-set by 2 index units.*

**96 Index - Angles for Quartz**  
Table should be 40% to 50% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° Indexing:  
96-12-24-36-48-60-72-84.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Eight facets at 49° indexing:  
96-12-24-36-48-60-72-84.

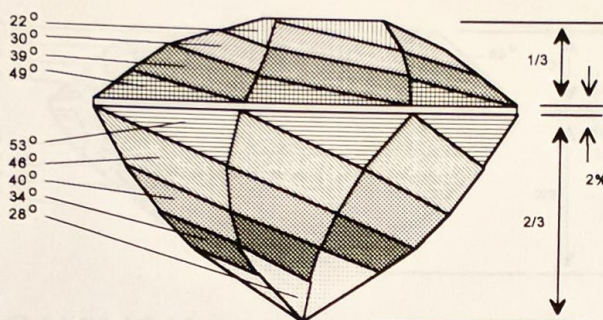
**GRIND 2nd:** Eight facets at 39° indexing:  
94-10-22-34-46-58-70-82.

**GRIND 3rd:** Eight facets at 30° indexing:  
92-8-20-32-44-56-68-80.

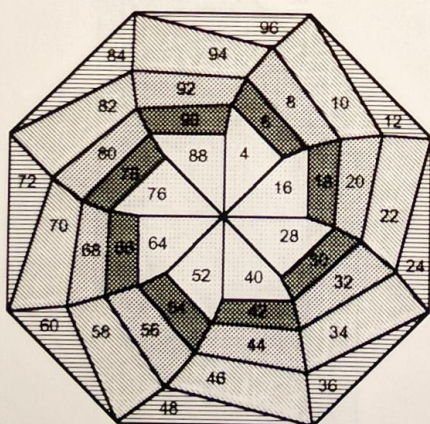
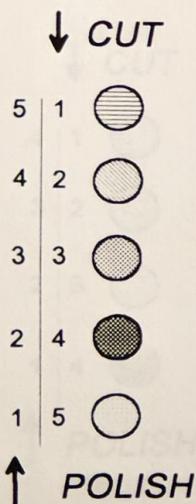
**GRIND 4th:** Eight facets at 22° indexing:  
90-6-18-30-42-54-66-78.

See polishing order on left, using same angles and indices as with grinding.

### SIDE VIEW



### PAVILION



### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Eight facets at 53° indexing:  
96-12-24-36-48-60-72-84.

**GRIND 2nd:** Eight facets at 46° indexing:  
94-10-22-34-46-58-70-82.

**GRIND 3rd:** Eight facets at 40° indexing:  
92-8-20-32-44-56-68-80.

**GRIND 4th:** Eight facets at 34° indexing:  
90-6-18-30-42-54-66-78.

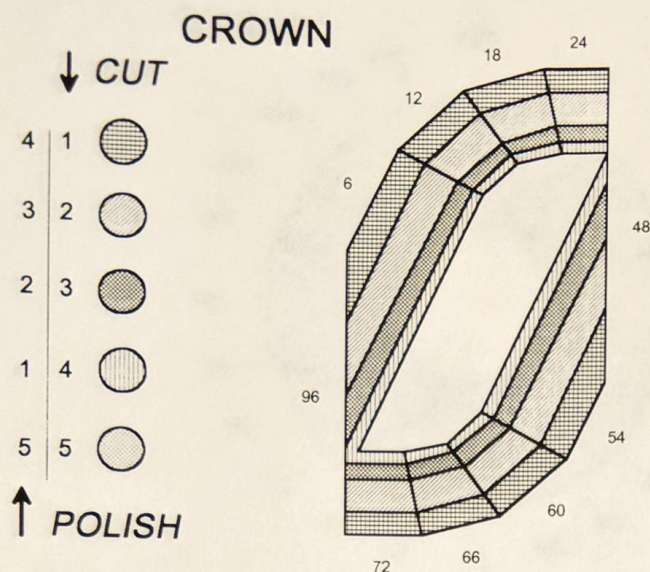
**GRIND 5th:** Eight facets at 28° indexing:  
88-4-16-28-40-52-64-76.

See polishing order on left, using same angles and indices as with grinding.

### TABLE

Cut and polish table in 45° dop holder. Table should be about 40% of girdle width.





When looking at the SAN FRANCISCO cut you'll notice the lazy "S" appearance. Bob Livingston designed cut as part of his series "Cities of California." The original stone was a medium blue topaz. The sparkling blue reflections suggested the blue waters of San Francisco Bay, hence the name.

**96 Index - Angles for Quartz**  
**Ratio of Length to Width - 1.8:1**  
**Table should be 35% to 40% of girdle width.**

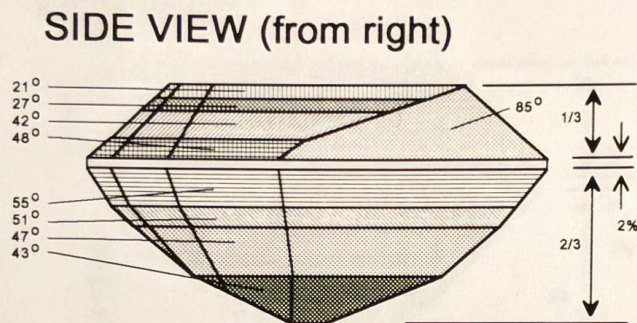
### SHAPE GEM

Shape girdle by grinding facet pairs at 90° indexing 96-48, 6-54, 12-60, 18-66, 24-72.

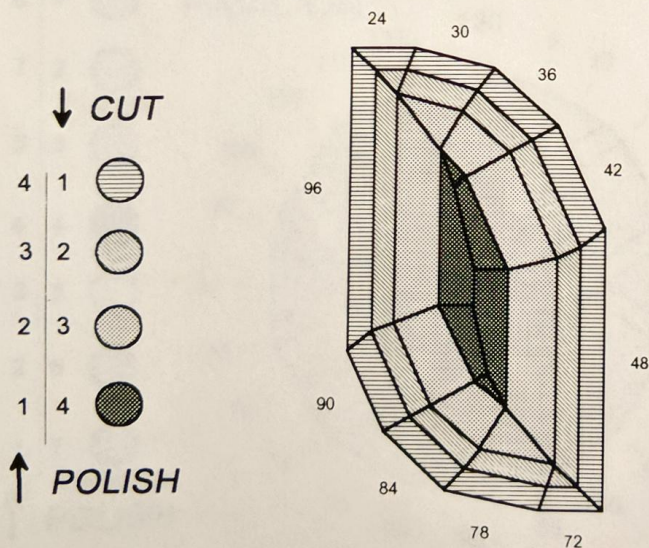
**NOTE:** Cut crown facets first, then table, and cut pavilion facets last.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Eight facets at 48° indexing: 6-54, 12-60, 18-66, 24-72.  
**GRIND 2nd:** Eight facets at 42° indexing: 6-54, 12-60, 18-66, 24-72.  
**GRIND 3rd:** Eight facets at 27° indexing: 6-54, 12-60, 18-66, 24-72.  
**GRIND 4th:** Eight facets at 21° indexing: 6-54, 12-60, 18-66, 24-72.  
**GRIND 5th:** Two facets at 75° to 85° indexing: 96-48.



### PAVILION



See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Ten facets at 55° indexing: 96-48, 42-90, 36-84, 30-78, 24-72.  
**GRIND 2nd:** Ten facets at 51° indexing: 96-48, 42-90, 36-84, 30-78, 24-72.  
**GRIND 3rd:** Ten facets at 47° indexing: 96-48, 42-90, 36-84, 30-78, 24-72.  
**GRIND 4th:** Ten facets at 43° indexing: 96-48, 42-90, 36-84, 30-78, 24-72.

See polishing order on left, using same angles and indices as with grinding.

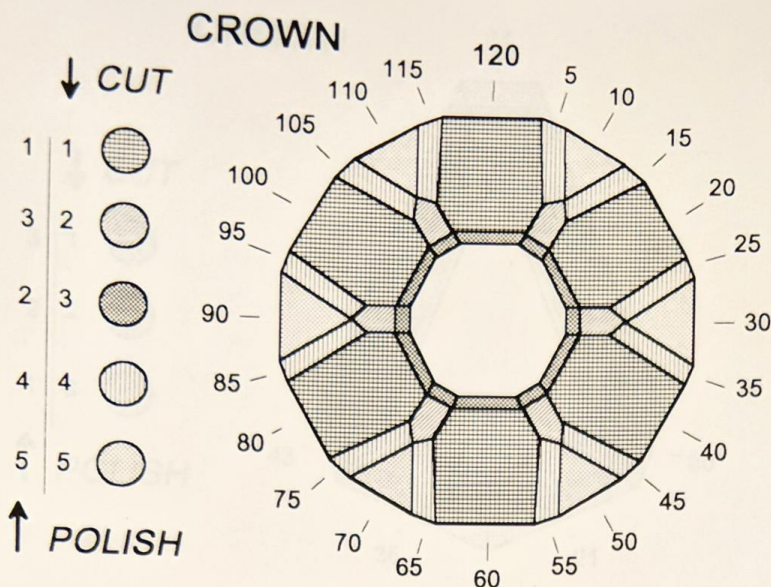
### TABLE

Cut and polish table in 45° dop holder. Table should be about 40% of girdle width.

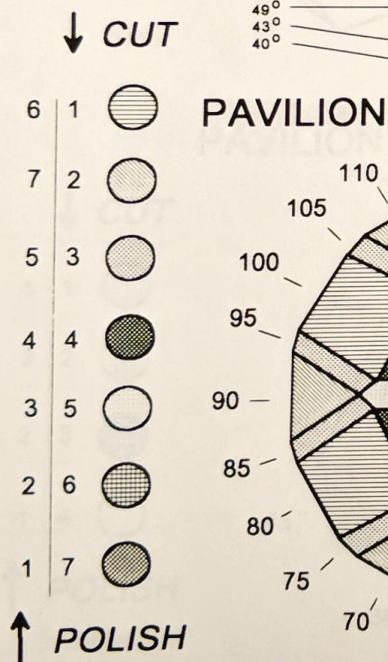
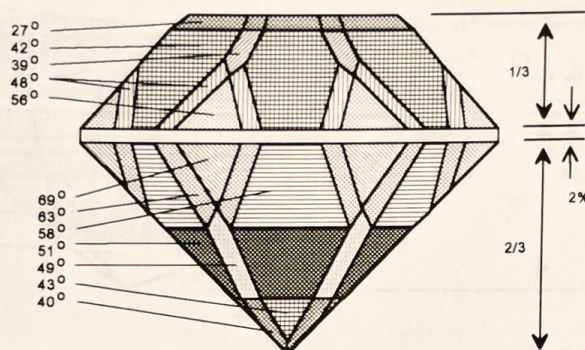


# SNOW FLAKE

No. 15



## SIDE VIEW



*SNOWFLAKE is a different cut. Looking for the unusual? Well... Mel Roth, the designer, truly knew what faceters like when they're looking for something new. The finished gem should not be less than 14mm diameter*

**120 Index - Angles for Quartz**  
Table should be about 40% of table width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
5-10-15-20-25-30-35-40-etc.

### ORDER OF CUTTING - Crown

- GRIND 1st:** Six facets at 42° indexing:  
120-20-40-60-80-100.
- GRIND 2nd:** Six facets at 39° indexing:  
10-30-50-70-90-110.
- GRIND 3rd:** Twelve facets at 27° indexing:  
120-10-20-30-40-50-60-70-80-90-100-110.
- GRIND 4th:** Twelve facets at 48° indexing:  
5-15-25-35-45-55-65-75-85-95-105-115.
- GRIND 5th:** Six facets at 56° indexing:  
10-30-50-70-90-110.

See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

- GRIND 1st:** Six facets at 58° indexing:  
120-20-40-60-80-100.
- GRIND 2nd:** Six facets at 69° indexing:  
10-30-50-70-90-110.
- GRIND 3rd:** Twelve facets at 63° indexing:  
5-15-25-35-45-55-65-75-85-95-105-115.
- GRIND 4th:** Six facets at 51° indexing:  
120-20-40-60-80-100.
- GRIND 5th:** Six facets at 49° indexing:  
10-30-50-70-90-110.
- GRIND 6th:** Six facets at 43° indexing:  
120-20-40-60-80-100.
- GRIND 7th:** Six facets at 40° indexing:  
10-30-50-70-90-110.

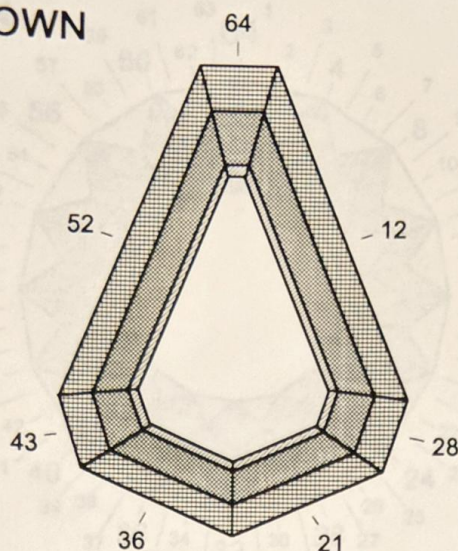
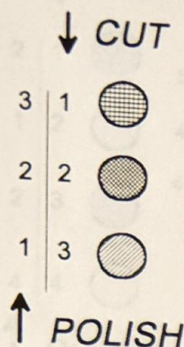
See polishing order on left, using same angles and indices as with grinding.



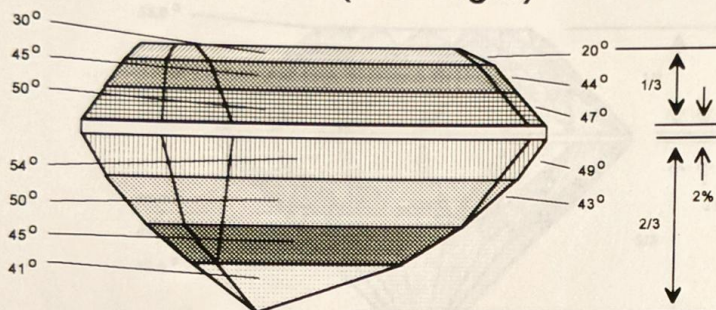
# STEP CUT PENDANT

No. 16

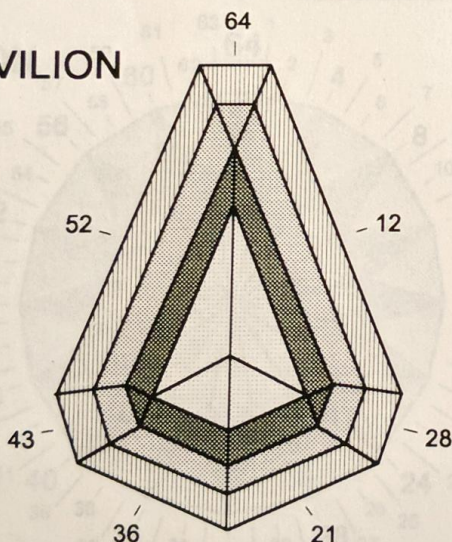
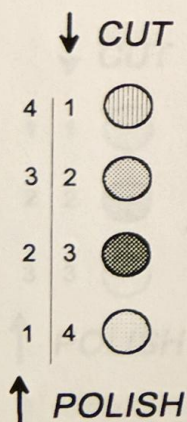
## CROWN



## SIDE VIEW (from right)



## PAVILION



Although the STEP CUT PENDANT was designed over 40 years ago by T. E. Conyers, it continues to be very popular. This design first appeared in "GEMS AND MINERALS" in 1956. It was first displayed at the annual show of the Austin Gem and Mineral Society in 1955. We recommended using lighter colored stones.

**64 Index - Angles for Quartz**  
Ratio of Length to Width - 1.35:1  
Table should be about 50% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
64-12-21-28-36-43-52.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Six facets at 50° indexing:  
12-52, 21-43, 28-36. One Facet at 47° indexing 64.

**GRIND 2nd:** Six facets at 45° indexing:  
12-52, 21-43, 28-36. One facet at 44° indexing 64.

**GRIND 3rd:** Six facets at 30° indexing:  
12-52, 21-43, 28-36. One Facet at 20° indexing 64.

See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Six facets at 54° indexing:  
12-52, 21-43, 28-36. One Facet at 49° indexing 64.

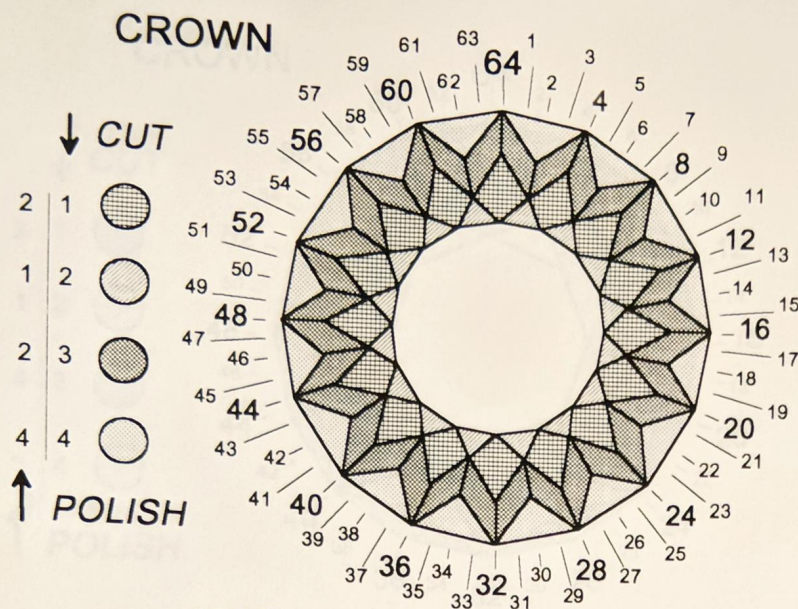
**GRIND 2nd:** Six facets at 50° indexing:  
12-52, 21-43, 28-36. One Facet at 43° indexing 64.

**GRIND 3rd:** Six facets at 45° indexing:  
12-52, 21-43, 28-36. Two Facet at 45° indexing 21-43.

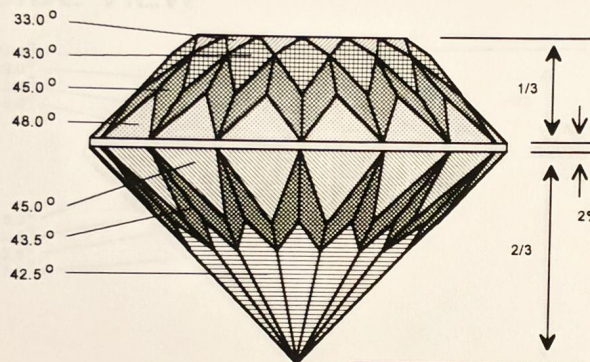
**GRIND 4th:** Four facets at 41° indexing:  
21-52, 28-36.

See polishing order on left, using same angles and indices as with grinding.

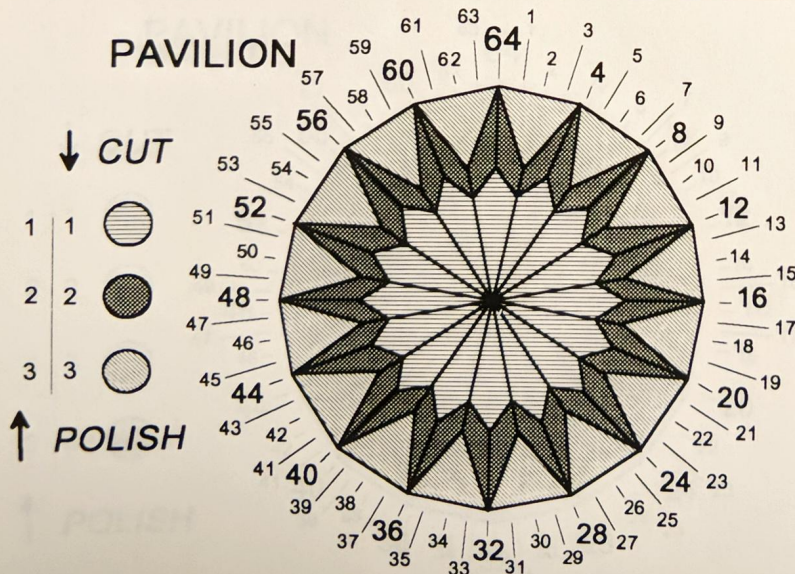




### SIDE VIEW



### PAVILION



*SUNBURST* was designed by Alton B. Walls, who was encouraged to submit it by fellow members of the Mother Lode Gem and Mineral Society. And we can see why.

The original gem was made from Y.A.G. Diameter of the finished stone should be at least 11mm.

**NOTE:** On the crown, the tops of the girdle facets and the bottoms of the main facets must be equidistant from the girdle. If this is done, the diagonal facets will be diamond-shaped. If not, they will be chevron-shaped.

### 64 Index - Angles for Quartz

Table should be about 50% of girdle width.

### SHAPE GEM

Shape girdle by grinding at 90° indexing:  
2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62.

### ORDER OF CUTTING - Crown

**GRIND 1st:** Sixteen facets at 43° indexing:  
64-4-8-12-16-20-24-28-32-36-40-44-48-52-56-60.

**GRIND 2nd:** Sixteen facets at 33° indexing:  
2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62.

**GRIND 3rd:** Thirty-two facets at 45° indexing:  
1-3-5-7-9-11-etc.

**GRIND 4th:** Sixteen facets at 48° indexing:  
2-6-10-14-etc.

See polishing order on left, using same angles and indices as with grinding.

### ORDER OF CUTTING - Pavilion

**GRIND 1st:** Sixteen facets at 42-1/2° indexing:  
64-4-8-12-etc.

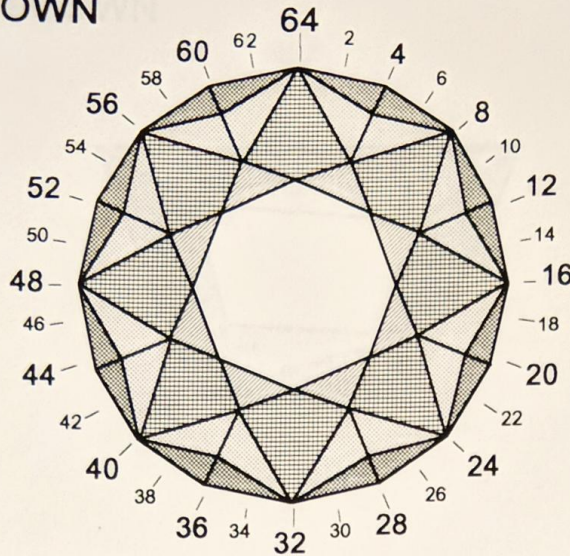
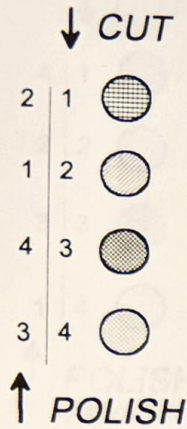
**GRIND 2nd:** Thirty-two facets at 43-1/2° index:  
1-3-5-7-9-11-etc.

**GRIND 3rd:** Sixteen facets at 45° indexing:  
2-6-10-14-etc.

See polishing order on left, using same angles and indices as with grinding.



## CROWN



The originator of this cut was Alfred E. Switzer, brother of Marcus R. Switzer who operated Switzer's School of Faceting in Manhattan Beach, California. After thirty-two hours of instruction as a student, he designed the cut. The original gem was made of Disaf (synthetic), weighed two carats, and measured 10mm in diameter.

**64 Index - Angles for Quartz**  
Table should be about 50% of girdle width.

## SHAPE GEM

Shape girdle by grinding at 90° indexing:  
2-6-10-14-18-22-26-30-34-38-42-46-50-54-58-62.

## ORDER OF CUTTING - Crown

**GRIND 1st:** Eight facets at 39° indexing:  
64-8-16-24-32-40-48-56.

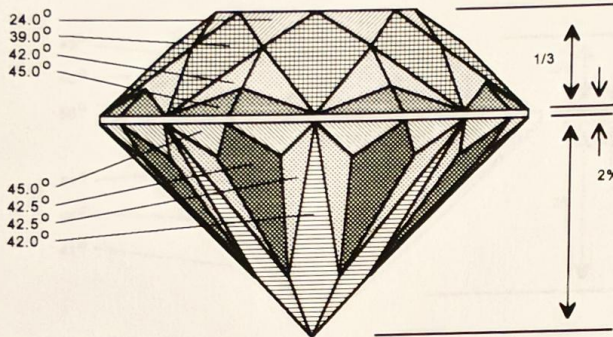
**GRIND 2nd:** Eight facets at 24° indexing:  
4-12-20-28-36-44-52-60.

**GRIND 4th:** Sixteen facets at 42° indexing:  
63-1-7-9-15-17-23-25-31-33-39-41-47-49-55-57.

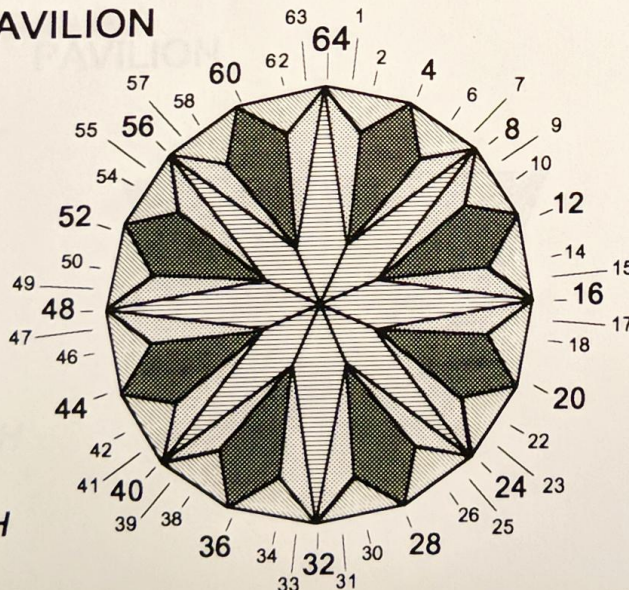
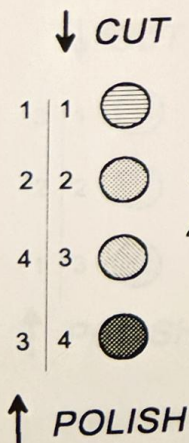
**GRIND 3rd:** Sixteen facets at 45° indexing:  
62-2-6-10-14-18-22-26-30-34-38-42-46-50-54-58.

See polishing order on left, using same angles and indices as with grinding.

## SIDE VIEW



## PAVILION



## ORDER OF CUTTING - Pavilion

**GRIND 1st:** Eight facets at 42° indexing:  
64-8-16-24-32-40-48-56.

**GRIND 2nd:** Sixteen facets at 42-1/2° indexing:  
63-1-7-9-etc.

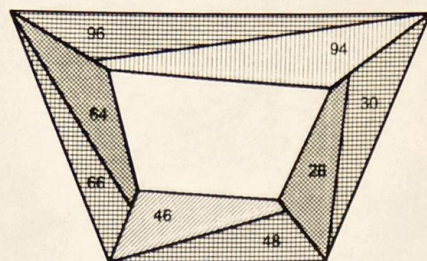
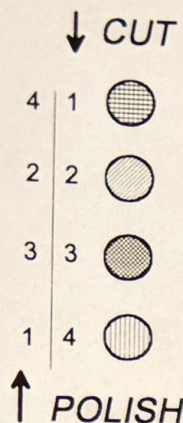
**GRIND 3rd:** Sixteen facets at 45° indexing:  
62-2-6-10-etc.

**GRIND 4th:** Eight facets at 42-1/2° indexing:  
4-12-20-28-etc.

See polishing order on left, using same angles and indices as with grinding.



## CROWN



TRAPEZE TWIST is another contribution from the Seattle Faceter's club, and was designed by Bill Steele. The cut is different and unusual. While simple in design, you'll be surprised at how much brilliance is reflected. Our test cut was made using pale yellow citrine. The finished stone was 14mm at the widest point on the girdle.

96 Index - Angles for Quartz  
Ratio of Length to Width - 1.7:1  
Table should be about 50% of girdle width.

## SHAPE GEM

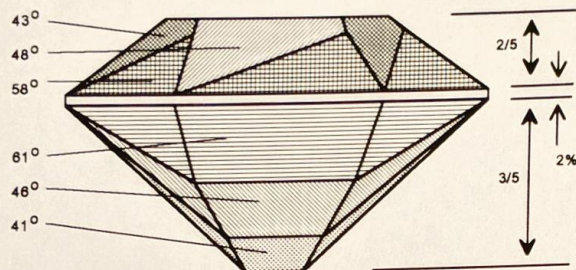
Go direct to angle cutting of crown. Girdle is cut after pavilion is faceted.

## ORDER OF CUTTING - Crown

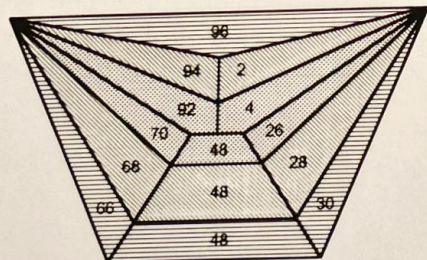
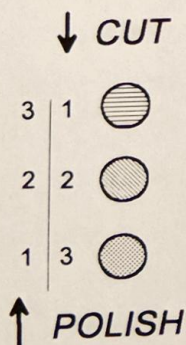
- GRIND 1st:** Four facets at  $58^\circ$  indexing: 96-48, 30-66.  
**GRIND 2nd:** One facet at  $48^\circ$  indexing 46.  
**GRIND 3rd:** Two facets at  $43^\circ$  indexing 28-64.  
**GRIND 4th:** One facet at  $40^\circ$  indexing 94.

See polishing order on left, using same angles and indices as with grinding.

## SIDE VIEW



## PAVILION



## ORDER OF CUTTING - Pavilion

- GRIND 1st:** Four facets at  $61^\circ$  indexing: 96-48, 30-66.  
**GRIND 2nd:** Five facets at  $46^\circ$  indexing: 48, 2-94, 28-68.  
**GRIND 3rd:** Five facets at  $41^\circ$  indexing: 48, 4-92, 26-70.

## GIRDLE CUTTING

Four facets at  $90^\circ$  indexing 96-48, 18-66.

See polishing order on left for pavilion, using same angles and indices as with grinding.